



TELEOLOGIC LEARNING COMPANY

Architecting Effective Network Based Learning

AFIADL NOTE: "Although this study had a population of only 16 students, it's an important first step in understanding our learners -- their expectations, their level of satisfaction with 5-level upgrade training, and their performance in achieving training objectives. We plan to follow this group of 16 over the period of a year to further assess their performance on the CDC exam, as well as performance on the job."

If you would like a copy of the full eCDC evaluation report (2.6 MB), contact afiadl.ait@maxwell.af.mil.



› eCDC Project Executive Summary

*Conducted by
Teleologic Learning
Company and AFIADL*

› *December 27, 2004*

EXECUTIVE SUMMARY

The Air Force is interested in the discovery of techniques and processes for training Airmen that are more effective. One proposed solution for achieving this goal is the conversion of CDCs to eCDCs. In this process, courses currently designed and delivered in a paper-based format are converted to a digital format, then delivered online. It is hypothesized that such an effort will result in Airmen who are better prepared in the mission critical knowledge and skills addressed by the CDC curriculum.

In an effort to evaluate the feasibility and effectiveness of such an initiative, AFIADL and Teleologic Learning Company worked jointly to convert the paper-based "CDC 2R051 Maintenance Management Analysis Journeyman, Volume 3—Statistical Methods" into online instruction. Upon conclusion of the conversion, an evaluation was conducted to compare learner performance on, satisfaction with, and perceived effectiveness of the paper-based versus the online version of the CDC.

PROJECT GOALS

The eCDC project took into consideration three basic goals:

- To design a network-centric learning experience that is effective at helping Airmen achieve the learning objectives identified for the Volume 3 Statistical Methods instruction in a timely manner, and in a way that would ultimately result in less expense than the paper-based method of design and delivery.
- To effectively and efficiently teach, via online presentation, the statistics and principles that every maintenance management analysis journeyman needs to know and be able to apply in order to be effective on his/her job.
- To test the effectiveness of, and level of learner satisfaction with, a network-centric learning experience.

PROJECT PROCESS

An evaluation plan was devised in which part of a group of learners studied a paper-based version, and part an online version, of the Volume 3 instruction. Each group of learners took an identical pre- and post-test, plus completed a series of evaluation surveys. The entire validation process could not exceed four days.

The evaluation plan focused on three items:

- Learner performance in achieving stated learning objectives of the instruction
- Learner satisfaction with the instructional method used in the instruction
- Learner perception of effectiveness of the instruction

Sixteen learners participated in the evaluation. These 16 comprised the entire population of active duty students graduating from 3-level 2RO resident training. This was not a sample group of a larger population. The 16 learners were randomly assigned in the evaluation study to take either paper-based or online form of the instruction.

Both groups experienced the same environment, were proctored throughout the evaluation, were given oral and written instructions on their role in the evaluation, were not given feedback during the evaluation, and were encouraged to take breaks.

PROJECT FINDINGS, IMPLICATIONS, AND RECOMMENDATIONS

Following are the findings, implications, and recommendations for the three primary items on which the evaluation plan focused:

Learner Performance—Both groups of learners improved their performance as a result of studying the instruction. The “paper-based learners” had a somewhat larger mean positive change in performance on their pre- vs. post-tests, than did the “online learners.” Specifically, the online learners showed an increase of 6 points, while the paper-based learners showed an increase of 11 points. It should be noted that going into the study, the paper-based group as a whole had higher average ASVAB scores than the learners in the online group. Accordingly, the paper-based group was predisposed to performing better in the course than the online group.

Given the very small size of the population involved in the evaluation plan, it is recommended that AFIADL undertake additional study to produce more reliable achievement results. It is also recommended that AFIADL plan to capture current CDC end-of-course scores for this instruction and compare them with scores in a year’s time, after most students will have studied both paper and online versions of the instruction. This should be done as an additional means of analyzing differences in effectiveness of the two forms of delivery.

Learner Satisfaction—The “online learners” in the study reported significantly higher levels of learning satisfaction with the method of instruction they experienced than did the “paper-based learners.” This finding is in line with research conducted by Dr. Diana Oblinger for EDUCAUSE Live in 2004. Dr. Oblinger found that the current generation of college age students (as well as younger students) were much more comfortable learning online and using the internet to help them learn. This “Net-Gen” group was found to use computers and the Internet more frequently than their parents and older generations. These findings show the Net-Gen group have an overall greater level of comfort with, as well as an increasing reliance on, computers and the Internet.

Further, demographic surveys of the study participants found that 44% of all participants would prefer computer-based training (e.g., interactive multimedia on web, network, or on CD/DVD) as compared to only 13% who would prefer printed or printable format training. And, when given the choice between receiving training materials already printed or in printable format, 56% responded that they would choose a computer-based method to receive printable materials (e.g., print from web, network, CD) as opposed to only 25% who indicated they would choose to receive materials in hard copy.

As before, however, given the very small size of the population involved in the evaluation plan, it is recommended that AFIADL conduct further study to validate its findings related to learner satisfaction.

Learner Perception of Effectiveness—Both “online learners” and “paper-based learners” indicated the online form of the course was the more effective means of delivering instruction. None of the online group indicated the paper-based model would be more effective, while 86% of the paper-based group reported that the online model was the more effective means of instructional delivery.

These findings are again in line with the research of Dr. Oblinger, which shows a marked preference by members of the Net-Gen group for online learning.

Like the other findings above, however, it is recommended that AFIADL undertake additional study with a larger population, in order to validate these results.